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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/530,883	04/11/2005	Yoshitaka Sugawara	3688KE-1	9237

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EXAMINER

SEFER, AHMED N

ART UNIT	PAPER NUMBER
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2826

DATE MAILED: 08/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

RD

<b>Office Action Summary</b>	Application No. 10/530,883	Applicant(s) SUGAWARA, YOSHITAKA	
	Examiner A. Sefer	Art Unit 2826	

-- **Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 June 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 12-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/11/05</u> | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election without traverse of claims 1-11 in the reply filed on June 16, 2006 is acknowledged.

### *Claim Objections*

2. Claim 11 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claim 11 has not been further treated on the merits.

### *Claim Rejections - 35 USC § 112*

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, the phrase "ordinary" renders the claim(s) indefinite because it is unclear what ordinary temperature is.

The recitations of claims 2 and 9 calling for, "**the decrement, the steady loss, and the increment**" lack proper antecedent basis.

The recitation of claims 3 and 4 calling for, "**the life time**" lacks proper antecedent basis.

The recitation of claims 3 and 4 calling for, "**adjusted in advance**" is not understood. It appears the adjustment is made in advance of something but is not clear what that something is.

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The recitation of claims 8 and 9 calling for, "**the radiation**" lacks proper antecedent basis.

The recitation of claim 9 calling for, "... larger than the increment of said steady loss corresponding to the increment of the ON resistance increasing depending on said temperature ..." is not understood. It is not clear what is increasing and depending on said temperature rise.

The recitation of claim 10 calling for, "**the detection output**" lacks proper antecedent basis.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-9, as understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugawara JP-2002-325355 ("Sugawara '55") (**of record**) in view of Sugawara ("Sugawara"), "Recent Progress in Sic Power Device Developments and Application Studies," April 14-17, 2003, Cambridge, UK. pp. 10-18 (**of record**).

Sugawara '55 discloses in figs. 1-4 a semiconductor device comprising: a wide-gap bipolar semiconductor element 24/26 using a wide-gap semiconductor and having a built-in voltage (inherent) in the forward direction, a semiconductor package accommodating said wide-gap bipolar semiconductor element and having electrical connection means (106, 1289A, 1289B, 128) for connecting said wide-gap bipolar semiconductor element to external apparatuses, but does not specifically disclose heating means for keeping said wide-gap bipolar semiconductor

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element inside said semiconductor package at a predetermined temperature higher than ordinary temperature.

Sugawara discloses (page 15, left col., first par.) a semiconductor device comprising: a wide-gap bipolar semiconductor element and heating means for keeping said wide-gap bipolar semiconductor element at a predetermined temperature higher than ordinary temperature or capable of heating said wide-gap bipolar semiconductor to a temperature within the recited range (as in claims 5 and 6).

Therefore, in view of Sugawara's teachings, one having an ordinary skill in the art at the time the invention was made would be motivated to modify Sugawara '55 by incorporating a heating means so as to reduce the built-in potential as taught by Sugawara.

As for the recitation of claim 2, it is a desired result rather than a structural limitation. See *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997); See also *In re Swinehart*, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971); *In re Danly*, 263, F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959).

Regarding claims 3 and 4, Sugawara's compact heat sink is capable of adjusting the life time carriers of said wide-gap element. As for method of irradiation recited in claims 3 and 4, it does not distinguish over Sugawara regardless of the method used since claims are directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Brown*, 173 USPQ 685 and *In re Thorpe*, 227 USPQ 964, 966. Therefore, the way the product was made does not carry any patentable weight as long as the claims are directed to a device. Further, note that the applicant has the burden of proof in such cases, as the above case law makes clear. Also see MPEP 2113.

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Regarding claim 8, Sugawara discloses a heat sink that raises the temperature of said wide-gap bipolar semiconductor element. As for the wide-gap bipolar semiconductor element being energized, it is a desired result rather than a structural limitation. See *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997); See also *In re Swinehart*, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971; *In re Danly*, 263, F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959).

Regarding claim 7, an electric heater is a variation of Sugawara's compact heat sink. If Applicants argue that electric heater and compact heat sink are not variations of each other, a further restriction might be required.

Regarding claim 9, Sugawara discloses a heat sink that raises the temperature of the wide-gap bipolar semiconductor element. As the for the recitation regarding increment/decrement, it does not distinguish over the Sugawara reference regardless of the functions allegedly performed by the claimed device, because only the device per se is relevant, not the recited function of increment/decrement.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Sefer whose telephone number is (571) 272-1921.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ANS  
August 18, 2006



LEONARDO ANDUJAR  
PRIMARY EXAMINEE